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| 09/832,795 | 04/12/2001 | Takeo Kawase | 109263 | 1435 |

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EXAMINER

HODGES, MATTHEW P

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| ART UNIT | PAPER NUMBER |
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2879

DATE MAILED: 06/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/832,795

Applicant(s)

KAWASE, TAKEO

Examiner

Matt P Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 9-12 and 15 is/are rejected.
- 7) ☒ Claim(s) 4, 7, 8 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION***Election/Restrictions***

Applicant's election with traverse of group I in Paper No. 8 is acknowledged. The traversal is on the ground(s) that subject matter of both claimed inventions is sufficiently similar such that a thorough search of either area would encompass a search for the alternative claimed invention. Therefore the search and examination of the entire application could be made without serious burden to the examiner. (MPEP § 803) This is not found persuasive because the examiner, in order to establish reasons for insisting upon restriction after distinctness has been demonstrated, must show by appropriate explanation that the following condition is held: there is separate classification. This shows that each distinct subject has attained recognition in the art as a separate subject for the inventive effort, and also a separate field of search. (MPEP § 808.02 A) It is noted that the examiner has asserted that the inventions of Group I and Group II are distinct and that both groups are separately classified. Therefore examiner properly satisfies the criteria for establishing undue burden in accordance with MPEP § 808.02 (A).

The requirement is still deemed proper and is therefore made FINAL.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

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- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The disclosure is objected to because of the following informalities:

Page 20, the words "Fig. 1" should be removed from the end of the abstract.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 14 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a corrugated surface covering the surface of the interface, it does not reasonably provides enablement for a surface interface having a plurality of regions each of which has a corrugated surface with a respectively different pitch. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. In this case there is no indication in the specification or drawings to suggest the use of a plurality of regions where the pitch of the corrugations varies from region to region.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 10 and 11, applicant has failed to point out how any of the suggested patterns disclosed in the specification for use on a two dimensional surface are limited to one or two dimensions. In this case the light-emitting layer has a width and length (x and y). Any corrugations in this surface would necessarily have both an x and y axis component and would further have a depth in the z-axis thus amounting to a three dimensional structure. If this pattern repeats then it is a three dimensional periodic structure.

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For the purpose of examination any structure meeting the limitations of a three dimensional periodic structure is assumed to also meet the limitations of claim 10 and 11.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 6, 10-12 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Bao et al. (US 6,252,253).

Regarding claims 1, 2 and 15, Bao discloses (see figure 1) a light-emitting device including a substrate (15), a transparent electrode (20), an organic light emitting layer (25), and a second electrode (30). Further the light-emitting layer is corrugated on its uppermost surface. (Column 4 line 61 – Column 5 line 32).

Regarding claim 5, the organic light-emitting layer (PPV) disclosed by Bao inherently has an absorption coefficient less than 1000 cm⁻¹ in the region, for instance, of 500nm.

Regarding claim 6, Bao further discloses the use of a conjugated polymer as the light-emitting layer. (Column 5 line 7-10).

Regarding claims 10-12, Bao further discloses the use of a three dimensional periodic structure (see figure 2) for use as the corrugated surface of the active layer.

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Claims 1, 3, and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi (JP 61-212084).

Regarding claims 1 and 3, Hiroshi discloses (see figure) a light-emitting device including a substrate (10), a transparent electrode (18), a light-emitting layer (14), and a second electrode (19). Further the light-emitting layer and the substrate layer are corrugated.. (See abstract).

Regarding claims 10-12, Bao further discloses the use of a three dimensional periodic structure for use as the corrugated surface of the active layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bao et al. (US 6,252,253).

Regarding claim 9, Bao discloses the invention as claimed in the rejection of claim 1 above but does not appear to specify the pitch of the corrugated surface. However Bao does disclose that the choice of the pattern of the surface is decided by the desired pattern of the end user. Further it has been held that a change in size is generally recognized as being within the level of ordinary skill in the art. Thus it would have been obvious to one having ordinary skill in

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the art to use a pitch of 300 nm, since such a modification would have involve a mere change in the shape of a component.

Allowable Subject Matter

Claims 4, 7, 8, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 4, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 4, and specifically comprising the limitation a light emitting device including a corrugation on a light emitting layer that is in contact with the corrugation of a polymer layer formed over a transparent electrode.

Regarding claim 7, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 7, and specifically comprising the limitation a light emitting device including a corrugation on a light emitting layer where the light emitting layer is formed from a polyflourine derivative.

Regarding claim 8, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 8, and specifically comprising the limitation a light emitting device including a corrugation on a light emitting layer where the pitch of the corrugation adheres to the equation $\Lambda = v\lambda_0 / n\sin\Theta_m$.

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Where Λ is the pitch, Θ_m is the angle of reflection from the upper and lower surfaces of the layers of light emitting material of light propagation in a wave guide mode m in the light emitting material, λ_0 is the output wavelength, and n and v are integers.

Regarding claim 13, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 13, and specifically comprising the limitation a light emitting device including a corrugation on a light emitting layer where the corrugation has the structure of a chirping grating.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Scifres et al. (US 4,803,691) discloses the use of a corrugated surface throughout the optical device.

Yamazaki (US 6,433,487) discloses the use of a corrugated surface on an EL device.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (703) 305-4015. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mph *mph*
June 16, 2003

VIP Patel
VIP PATEL
PRIMARY EXAMINER